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(54) Apparatus for measuring ultrasonic characteristics of a medium.

(57) An embodiment of the present invention relates to an apparatus for obtaining an acoustic characteristic of a medium, more specifically attenuation slope  $\beta$ , by sending ultrasound into the medium and analysing echo signals from the medium. A spectrum obtained from an echo signal includes random partial distortion, namely suffers superposition of the so-called scallop factor. Therefore a value  $\beta$  obtained from such spectrum suffers great fluctuation. In order to suppress such fluctuation, values of  $\beta$  are obtained for a plurality of adjacent points or domains which are estimated to have the same value of  $\beta$  and then a mean of the obtained values of  $\beta$  is obtained. However, such spatial averaging naturally reduces space resolution. An embodiment of the present invention provides for execution of a nonlinear filtering process, for example a median filtering process, in relation to a spectrum (obtained from an echo signal), applies a model spectrum to the result of the nonlinear filtering process and thereby facilitates measurement with suppression of fluctuation even when the number of spatially averaged samples is reduced, by obtaining a value of  $\beta$  from the model spectrum.

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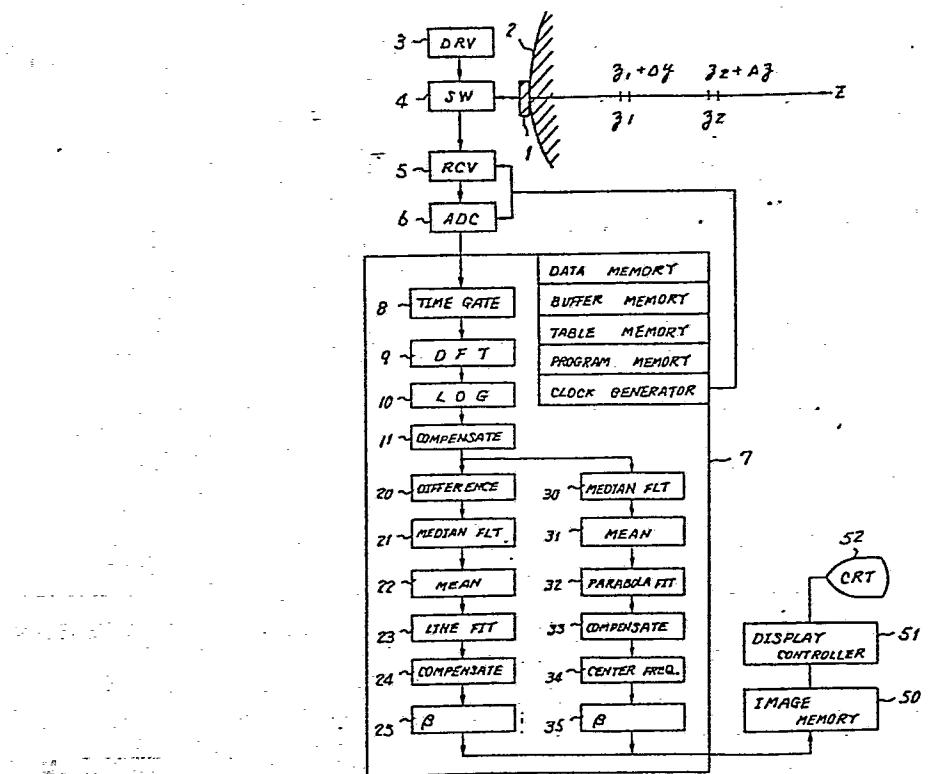


Fig. 1



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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING, vol. BME-32, no. 3, March 1985, pages 205-212, IEEE, New York, US; J. OPHIR et al.: "A narrowband pulse-echo technique for In Vivo ultrasonic attenuation estimation" * Whole document * ---	1-4	G 01 N 29/00
X	ULTRASONIC IMAGING, vol. 5, no. 2, April 1983, pages 117-135, Academic Press; M. FINK et al.: "Ultrasonic signal processing for In Vivo attenuation measurement: Short time fourier analysis" * Pages 117, 124-125 *	1-4	
X	EP-A-0 166 182 (FUJITSU) * Claim 1 * & WO-A-85 2682 (20-06-1985) ---	1-3	
A	EP-A-0 064 399 (FUJITSU) * Abstract; figure 3 *	1,2	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			G 01 N G 01 S
The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	06-07-1989	KOUZELIS D.	

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone  
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E : earlier patent document, but published on, or after the filing date  
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